Revised Draft
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C&SF Project Restudy – Existing (1995) and Future (2050) Without Project Condition Summaries

	Existing (1995) Condition	Future (2050) Without Project Condition
Climate	The 1965 to 1995 climatic record was used for evaluations of the Existing (1995) Condition. Rainfall and potential evapotranspiration are the key climatic inputs. The same climatic record is also used for the evaluation of the Future (2050) Without Project Condition and will be used in the evaluation of plan alternatives.	Just as for the Existing (1995) Condition, the 1965 to 1995 climatic record was used to evaluate the Future (2050) Without Project Condition. This same climatic record will be used for the evaluation of all plan alternatives. Rainfall and potential evapotranspiration are the key climatic inputs.
Sea Level	For the Existing (1995) Condition, sea level data from six long-term USGS stations were used to generate a historic record to use as sea level boundary conditions for the 1965 to 1995 evaluation period.	For the Future (2050) Without Project Condition the same sea level data as for the Existing (1995) Condition are being used. An evaluation has also been completed for the Future (2050) Without Project Condition utilizing a ½ foot rise in sea level so that the impacts of such a change on the performance of the water management system can be assessed.
Population and Socio-Economic Conditions	The Existing (1995) Condition reflects actual 1995 population and socio-economic conditions. Population and socio-economic conditions enter into and affect the Existing (1995) Condition analysis largely through their impact on water demands.	Projections of 2050 population and socio-economic conditions for all areas except Service Area 3 (most of Dade County) are those contained in Final Report Municipal and Industrial Water Use Forecast Lake Okeechobee Regulation Schedule Study prepared for the U.S. Army Corps of Engineers Jacksonville District, August 1996. The projections contained in that report that are based on those developed by the University of Florida, Bureau of Economic and Business Research were utilized. For Service Area 3, projections in the report cited above were increased to reflect Dade County's estimation of its future population growth as influenced by recent immigration legislation and other factors.
Land Use	• For the portions of the Coastal Basins Covered by the Water Preserve Area Land Suitability Analysis, land use data updated through 1994 were available and were used for the analysis of the Existing (1995) Condition. For the remaining portions of the Coastal Basins the latest data available were the 1988 land use data developed for the Draft Lower East Coast Regional Water Supply Plan. • Land use in the Everglades Agricultural Area represents the estimated conditions in 1990, as estimated for the Draft Lower East Coast Regional Water Supply Plan. • Land use conditions in the remainder of the Lake Okeechobee Service Area are accounted for through the evaluations of demands.	• For the Coastal Basins for 2050, land use projections were based on future land use maps (2010) from local government comprehensive plans. • In the Everglades Agricultural Area land use will be the same as for the Existing (1995) Condition except that the land to be used for stormwater treatment areas will be shifted to that use. • Impacts of changes in land use in the remainder of the Lake Okeechobee Service Area are accounted for through the evaluations of demands. (see below)
Natural Area Land Cover (Vegetation)	Recently updated information on vegetation classes and their spatial distribution prepared by the District was used for the natural areas. The updated information include improved classification of wetland land cover types and generally reflect conditions in the 1990 to 1995 period.	• The 2050 vegetation classes and spatial distribution will remain the same as those proposed for the Existing (1995) Condition.
Urban and Agricultural Water Demands	• For the analysis of the Existing (1995) Condition, historical 1995 data on public water supply wellfield pumpages were used. The same public water supply pumpages are used for each of the 31 years of the analysis. • Irrigation demands in the Coastal Basins were based on land use and the daily climatic data for the 31 years of the analysis. • Everglades Agricultural Area irrigation demands were based on historic use patterns and daily climatic data for the thirty-one years of the analysis. • Demands on Lake Okeechobee by the remainder of the Lake Okeechobee Service Area (other than the Everglades Agricultural Area) including those of the Caloosahatchee and St. Lucie Canal Basins were based on historical	• For all areas, except Service Area 3, the public water supply demands which will be used are those contained in Final Report Municipal and Industrial Water Use Forecast Lake Okeechobee Regulation Schedule Study prepared for the U.S. Army Corps of Engineers Jacksonville District, August 1996. The University of Florida Bureau of Economic and Business Research unrestricted demand set was used. These reflect University of Florida Bureau of Economic and Business Research generated population projections. For Service Area 3 the public water supply demands have been increased to reflect Dade County's estimation of its future population growth as influenced by recent immigration legislation and other factors.

	Existing (1995) Condition	Future (2050) Without Project Condition
	records adjusted to reflect growth in demands over time due to development in these basins. • The St. Lucie Canal Basin demands include the existing Florida Power and Light reservoir at Indiantown. • The Upper East Coast rainfall runoff-relationship is the same as the runoff-relationship developed during the Indian River Lagoon Feasibility Study.	• Irrigation demands in the Lower East Coast Service Area are based on projected land use and climatic variables. • Irrigation demands for the Everglades Agricultural Area reflect the construction in the Stormwater Treatment Areas • Caloosahatchee River Basin demands increase by 40% from the Existing (1995) Condition based on Mazzotti's IFAS Citrus Study • St. Lucie Canal Basin demands remain the same as the Existing (1995) Condition based on projected land use and include the demand associated with the Florida Power and Light reservoir at Indiantown which will increase up to the existing permitted demand. • The Upper East Coast rainfall-runoff relationship will be the same as that used in the Existing (1995) Condition.
Physical Facilities & Operations - Lake Okeechobee & Lake Okeechobee Service Area	Existing (1995) water management system and practices including: • Lake Okeechobee Regulation Schedule Run-25 with: Lake Okeechobee regulatory discharges to Water Conservation Areas first, then to Caloosahatchee & St. Lucie if insufficient conveyance capacity exists through the Everglades Agricultural Area. Also Lake Okeechobee regulatory discharge to Water Conservation Areas allowed if Water Conservation Areas are below their regulation schedules. • Lake Okeechobee Supply Side management policy for Lake Okeechobee Service Area water restriction cutbacks • Interim Action Plan for reduced stormwater backpumping to Lake Okeechobee from Everglades Agricultural Area • No water supply backpumping to Lake Okeechobee from the Everglades Agricultural Area • Everglades Agricultural Area Best Management Practices • Everglades Agricultural Area Best Management Practices assumed to reduce runoff from Everglades Agricultural Area by ~18% per year • Everglades Agricultural Area Best Management Practices assumed to not reduce irrigation requirements from Lake Okeechobee • Replacement Water Deliveries per Everglades Forever Act(EFA)/SFWMD Rule • Historical Kissimmee River inflows to Lake Okeechobee.	Four changes are associated with the Everglades Construction Project as mandated by the Everglades Forever Act. They are: • Stormwater Treatment Areas • Northern L-8 water directed to Lake Okeechobee • Water quality entering Water Conservation Areas assumed to be that produced by Phase 2 of the Everglades Construction Project • Additional Everglades Agricultural Area lands previously draining to Lake Okeechobee now drains to the Everglades Protection Area More information on these components are described in the footnote.[1] Other changes are: • Deliveries to Water Conservation Areas up to annual average Best Management Practices Replacement Water Rule volumes • Kissimmee River Restoration and the Headwaters Revitalization Project, which will change the timing and amount of water flowing from the Kissimmee Basin into Lake Okeechobee.[2] • Strengthening of the Herbert Hoover Dike[3]
Physical Facilities & Operations – Water Conservation Areas, Holey Land Wildlife Management Area and	Existing (1995) water management system and practices including: • No net outflow from Water Conservation Areas (WCA) if water level is less than minimum operating criteria in canals of Loxahatchee National Wildlife Refuge (WCA-1): 14 ft., WCA-2A: 10.5ft., WCA-3A: 7.5 ft. • No regulatory releases to tide from Water Conservation Areas • C&SF Interim Regulation Schedule for the Loxahatchee National Wildlife Refuge (WCA-1) • Current WCA-2A & 3A regulation schedules • The topography in WCA-3B is consistent with the most recent USGS survey (USGS Report, December 1995) with the appropriate datum conversion from 1988 NAVD to 1929 NGVD.	1995 water management system and practices with the following changes: • No net outflow from Water Conservation Areas if water levels is less than Minimum Level marsh triggers or less than minimum operating criteria in canals of the Loxahatchee National Wildlife Refuge (WCA-1): 14 ft., WCA-2A: 10.5ft., WCA-3A: 7.5ft. Marsh level triggers will be those used in the Draft Lower East Coast Regional Water Supply Plan alternative 5. • Rainfall driven operational criteria for determining timing of deliveries to and discharges from WCA 2A and 3A with quantity adjusted to approximate Best Management Practices Replacement water quantities. • Structural modifications per federally authorized Modified Water Deliveries project[4] • Structural features of the Holey Land Wildlife Management Area are to be consistent with the Everglades Construction Project and operations

	Existing (1995) Condition	Future (2050) Without Project Condition
Rotenberger Wildlife Management Area		consistent with the Existing (1995) Condition. • Operations of the Rotenberger WMA are to be consistent with the Everglades Construction Project (December 1997 design of STA 5 and STA 6). • The topography in WCA-3B will be the same as that used in the Existing (1995) Condition.
Physical Facilities & Operations – Everglades National Park	Existing (1995) water management system and practices including: • Water deliveries to Everglades National Park are based on the current Experimental Rainfall Delivery Plan for flows to Shark River Slough vis S-12's and S-333 • Test 7 Phase 1 Operations of Experimental Program of Water Deliveries to Everglades National Park	1995 water management system and practices with the following changes: • The Federally authorized Modified Water Deliveries to Everglades National Park Project using a modified rainfall delivery plan to more closely replicate natural system like conditions consistent with WCA-3A rain-driven operations[4] • Federally authorized C-111 Project for Taylor Slough and East Panhandle.[5]
Physical Facilities & Operations – Lower East Coast Service Area	Existing (1995) water management system and practices including: • Existing C&SF system and operating rules in effect in 1995 • Existing secondary drainage/water supply system • Existing public water supply wellfields	1995 water management system and practices with the following changes: • Wellfield expansion in Service Areas 1, 2 and 3 based on the Lower East Coast Interim Plan [6] • Broward secondary canal recharge network based on the Lower East Coast Interim Plan [7] • Dade County utility aquifer storage and recovery based on the approved Lower East Coast Interim Plan [8] • Selected elements of L-8 project[9] • Northwest Dade Lake Belt area- assume that the conditions caused by the currently permitted mining exist and that the affects of any future mining are fully mitigated by industry. • Operational adjustments to try to maintain water levels in coastal canals to meet Minimum Levels in the Biscayne Aquifer as proposed in the Draft Lower East Coast Regional Water Supply Plan. • All projected service area demands will be reduced by 12% to account for the expected implementation of SFWMD's mandatory water conservation program (implementation of ultra-low flow fixtures and lawn sprinkler restrictions in residential and commercial land use).
Physical Facilities & Operations – Western Basins and Big Cypress	Existing (1995) water management system and practices including: • Estimated historical inflows from Western basins	1995 water management system and practices with the following changes: • Estimated inflows from Western basins according to Everglades Construction Project • Big Cypress Seminole Reservation irrigation demands increase reflecting the Seminole Compact.[10]
Region-wide Water Management and Related	• The analysis of the Existing (1995) Condition reflects the existing water shortage policies as reflected in South Florida Water Management District rule 40E-21. The impacts of declarations of water shortages on utility water use reflect assumptions contained in the Draft Lower East Coast Regional Water Supply Plan for the 2010 base case. These are that Phase 1 restrictions result in a 10% decrease in water use, while Phase 2 results in a	The assumptions for the Future (2050) Without Project Condition are the same as for the Existing (1995) Condition.

	Existing (1995) Condition	Future (2050) Without Project Condition
Operations	25% decrease, Phase 3 a 40% decrease and Phase 4 a 55% decrease. • Implementation of supply side management in the Lake Okeechobee Service Area is evaluated to mimic existing District practices as detailed in the District publication Lake Okeechobee Supply-side Management Plan, September 1991.	

[1] The components of the Everglades Construction Project are:

- Stormwater Treatment Areas – These 6 areas will cover more than 40,000 acres and will reduce the amount of phosphorus and other constituents in stormwater runoff before it enters the Everglades Protection Area. Associated facilities will improve the distribution of water as it enters the Everglades Protection Area to help recreate sheet flow conditions. Other improvements include enhanced flood protection for the C-51 basin,
- Northern L-8 water directed to Lake Okeechobee – A divide structure in L-8 and a pump station and improved structures at Lake Okeechobee will be used to direct runoff from the northerly part of the L-8 basin (consisting primarily of the Dupuis Reserve and the J.W. Corbett Wildlife Management Area) to Lake Okeechobee.
- Water quality entering Water Conservation Areas assumed to be that produced by Phase 2 of the Everglades Construction Project – The Everglades Forever Act requires that future inflows to the Everglades Protection Area meet future established standards for phosphorus or a default standard of 10 parts per billion. Because it is not certain what the phosphorus standards will be or what will be implemented without the C&SF Restudy to achieve those standards, the Future (2050) Without Project Condition assumes water entering the Everglades Protection Area will be of the quality produced by the Stormwater Treatment Areas. The alternatives of the Restudy will include as components those additional facilities needed to achieve the best estimate of the future standards.
- Additional Everglades Agricultural Area basins previously draining to Lake Okeechobee now drain to the Everglades Protection Area – As part of the requirements of the Everglades Forever Act, much of the water previously discharged to Lake Okeechobee from the East Beach, East Shore, 715 Farms and South Shore drainage districts will be routed to the Stormwater Treatment Areas and the Everglades Protection Area.

[2] The Kissimmee River Restoration Project will result in the backfilling of 29 miles of the C-38 Canal and the excavation of 11.6 miles of new river channel. This will restore a significant portion of the Kissimmee River and about 29,000 acres of wetlands. To provide the water in the timing and quantities needed for the restoration of the River, the Headwaters Revitalization Project is being undertaken. It includes modifications of the regulation schedules for the Upper Chain of Lakes and associated canal and water control structure modifications. The Headwaters Revitalization Project will also provide ecological benefits within the Upper Chain of Lakes Area. The impact of this project on Lake Okeechobee is that the timing of inflows to Lake Okeechobee will be changed and approximately 1.6% less water will enter the Lake from the Kissimmee River due to additional evapotranspiration upstream.

[3] These improvements will make the Herbert Hoover Dike less likely to fail under the existing regulation schedule and allow for slightly higher regulation schedules to be implemented without incurring additional costs. Such higher regulation schedules are not part of the Future (2050) Without Project Condition.

[4] The Modified Water Deliveries to Everglades National Park Project provides structural modifications to enable the restoration of more natural water flows to Shark River Slough in Everglades National Park. Components include structures to improve conveyance from WCA-3A to WCA-3 B and from WCA-3B to Everglades National Park, removal of an existing levee and canal (L-67 Extension) within Everglades National Park, a seepage control levee, canal and pump station to prevent additional flooding in the 8.5 square mile area, floodproofing of a Miccosukee Indian Camp and a pump station to return captured seepage water to Shark River Slough.

[5] The C-111 project consists of structural and non-structural modifications within the C-111 basin, which will improve hydroperiods in Taylor Slough, Shark River Slough and the eastern Panhandle areas of the Everglades. It will maintain flood protection within the agricultural areas adjacent to C-111. The C-111 Project Canal operations will be consistent with the authorized levels (aka Base '83) as recommended by SERA.

[6] This component is to be implemented as a result of the Lower East Coast Interim Plan and provides for relocation of future and some existing withdrawals from existing (1995) wellfields. Demands of the following utilities were evaluated assuming new wellfield locations: Lake Worth, Manalapan, Lantana, Boca Raton, Fort Lauderdale, Hollywood and Hallandale. The evaluations assumed that, for these utilities, demands shifted to new wellfields were the same as those identified in the Draft Lower East Coast Regional Water Supply Plan. Generally this means that 1995 levels of demands continued to be met from existing facilities while the portion of new demands beyond the 1995 levels were met from the newly expanded wellfields. The new wellfields were generally evaluated as being located along the western boundary of each utility's service area.

[7] This component is to be implemented as a result of the Lower East Coast Interim Plan and includes pump stations and structures which would maintain higher levels in secondary canals

in eastern Broward County between the Hillsboro and the North New River Canals during the dry season. The selected canals are located where recharge from the canals would help to hold back the salt water front and protect the production capability of wellfields to the east.

[8] This component is to be implemented as a result of the approved Lower East Coast Interim Plan and includes ASR wells and related facilities that would be installed associated with wellfields of the Miami Dade Water and Sewer Authority Department. These facilities would be operated to store water in the Floridan Aquifer in the wet season and recover this water in the dry season. For the Future (2050) Without Project Condition the evaluations were for a daily injection and recovery capacity of 150 mgd, a maximum recovery percentage of injected water of 90% an annual injection period of 7 months and an annual recovery period of 5 months.

[9] This component is to be implemented as a result of the Lower East Coast Interim Plan. It includes a structure and pump station from C-18 to the Loxahatchee Slough, an improved structural connection from the West Palm Beach Water Catchment Area to the Loxahatchee Slough, aquifer storage and recovery wells at the West Palm Beach Water Catchment Area or the Indian Trails Improvement District impoundment and a coastal recharge delivery system.

[10] The estimated irrigation demands for the Big Cypress Seminole Reservation will be supplied by local sources first then by the regional system. While deliveries to this area to meet irrigation demands are increased as compared to the Existing (1995) Condition, no increase in runoff is assumed.